CLAIMS

1. A sample injection apparatus having

a sampling vessel into which a sample is supplied,

a sampling needle for aspirating and ejecting the sample,

a cleaning part into which a cleaning liquid for cleaning at least the sampling needle is supplied,

a sample injection part for injecting the sample ejected from the sampling needle into a moving liquid, and

needle transfer means for transferring the sampling needle among the sampling vessel, the cleaning part and the sample injection part,

characterized in that the cleaning part has an ultrasonic vibrator for generating an ultrasonic wave in the cleaning liquid.

2. The sample injection apparatus as claimed in claim 1, characterized in that the cleaning part has a vibration buffer member for reducing propagation of vibration caused by the ultrasonic vibrator to a member other than the cleaning part in the sample injection apparatus.

3. The sample injection apparatus as claimed in claim 1, characterized in that a vibration frequency of the ultrasonic vibrator is 20 kHz or more and 80 kHz or less.

4. The sample injection apparatus as claimed in claim 3, characterized in that an inner diameter of the sampling needle is 0.1 mm or more and 0.8 mm or less.

5. A sample injection method characterized by having

a step of aspirating a sample into a sampling needle,

a step of holding the sample in the sampling needle and dipping the sampling needle in cleaning liquid,

a step of generating an ultrasonic wave in the cleaning liquid so as to clean the sampling needle dipped in the cleaning liquid, and

a step of ejecting the sample from the sampling needle so as to inject the sample into a moving liquid.

6. The sample injection method as claimed in claim 5, characterized in that a vibration frequency of the ultrasonic vibrator is 20 kHz or more and 80 kHz or less.

7. The sample injection method as claimed in claim 6, characterized in that an inner diameter of the sampling needle is 0.1 mm or more and 0.8 mm or less.

8. A liquid chromatography apparatus having

a mobile phase reservoir for storing a liquid as a mobile phase,

a sample injection apparatus for injecting a sample into the liquid as a mobile phase,

a separation column for separating a component of the sample sent from the sample injection apparatus and the liquid as a mobile phase, and

a detector for detecting a component of the sample separated by the separation column,

characterized in that the sample injection

apparatus has a sampling vessel into which a sample is supplied, a sampling needle for aspirating and ejecting the sample, a cleaning part into which a cleaning liquid for cleaning at least the sampling needle is supplied, a sample injection part for injecting the sample ejected from the sampling needle into the liquid as a mobile phase, and needle transfer means for transferring the sampling needle among the sampling vessel, the cleaning part and the sample injection part, wherein

the cleaning part has an ultrasonic vibrator for generating an ultrasonic wave in the cleaning liquid.

9. The liquid chromatography apparatus as claimed in claim 8, characterized in that the cleaning part has a vibration buffer member for reducing propagation of vibration caused by the ultrasonic vibrator to a member other than the cleaning part in the sample injection apparatus.

10. The liquid chromatography apparatus as claimed in claim 8, characterized in that a vibration frequency of the ultrasonic vibrator is 20 kHz or more and 80 kHz or less.

11. The liquid chromatography apparatus as claimed in claim 10, characterized in that an inner diameter of the sampling needle is 0.1 mm or more and 0.8 mm or less.